



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/542,103	03/16/2006	Masao Watari	J355-050 US	1068
21706 7590 05/05/2009 NOTARO & MICHALOS P.C. 100 DUTCH HILL ROAD SUITE 110 ORANGEBURG, NY 10962-2100				
EXAMINER TORRES, JOSEPH D				
ART UNIT		PAPER NUMBER		
2112				
MAIL DATE		DELIVERY MODE		
05/05/2009		PAPER		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/542,103

Applicant(s)

WATARI, MASAO

Examiner

Joseph D. Torres

Art Unit

2112

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 March 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 03/16/2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/CDC)
- 4) ☐ Interview Summary (PTO-413)
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____
- Paper No(s)/Mail Date _____

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 1 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 1 is directed to an Operation device for translating first representation data in an abstract direct product B_r^n of r-value sets B_r to a second representation data in an abstract direct product B_r^m of r-value sets B_r whereby B_r^n and B_r^m have respective unary, binary and T-nary operators and extended unary, binary and T-nary operators $G_N^q : B_r^n \rightarrow B_r^m$, $F_N^q : B_r^m \times B_r^m \rightarrow B_r^m$, $H_N^s : B_r^m \times B_r^m \cdots \times B_r^m \rightarrow B_r^m$, $G^q : \Omega_{G^q} in \rightarrow \Omega_{G^q} out$, $F^p : \Omega_{G^q} in \times \Omega_{G^q} in \rightarrow \Omega_{G^q} out$, $F^p : \Omega_{G^q} in \times \Omega_{G^q} in \cdots \times \Omega_{G^q} in \rightarrow \Omega_{G^q} out$, $G_O^q : B_r^n \rightarrow B_r^n$, $F_O^q : B_r^n \times B_r^n \rightarrow B_r^n$ and $H_O^s : B_r^n \times B_r^n \cdots \times B_r^n \rightarrow B_r^n$ comprising an encoder defined as an abstract operator $\Phi : B_r^n \rightarrow B_r^n$ operating on an abstract direct product B_r^n of r-value sets B_r ; a decoder defined as an abstract operator $\Psi : B_r^m \rightarrow B_r^n$ operating on an abstract direct product B_r^m of r-value sets B_r ; an operation means for second representation data in the abstract direct product B_r^m defined by respective unary, binary and T-nary operators $G_N^q : B_r^m \rightarrow B_r^m$, $F_N^q : B_r^m \times B_r^m \rightarrow B_r^m$ and $H_N^s : B_r^m \times B_r^m \cdots \times B_r^m \rightarrow B_r^m$; and an operation

means for first representation data in the abstract direct product B_r^n defined by respective unary, binary and T-nary operators $G^q : \Omega_{G^q}in \rightarrow \Omega_{G^q}out$,
 $F^p : \Omega_{G^q}in \times \Omega_{G^q}in \rightarrow \Omega_{G^q}out$ and $F^p : \Omega_{G^q}in \times \Omega_{G^q}in \cdots \times \Omega_{G^q}in \rightarrow \Omega_{G^q}out$ that can be extended to, $G_O^q : B_r^n \rightarrow B_r^n$, $F_O^q : B_r^n \times B_r^n \rightarrow B_r^n$ and $H_O^s : B_r^n \times B_r^n \cdots \times B_r^n \rightarrow B_r^n$ satisfying the five (5) abstract set theoretic constraints in the last five lines of claim 1.

The Authoritative Dictionary of IEEE Standards Terms defines device as (10) A mechanism or piece of equipment designed to serve a purpose or perform a function (11) A computer peripheral or an object that appears to the application as such. Claim 1 is indefinite since it is not clear whether the claim is directed to an Abstract mathematical algorithm or whether the claims are directed to all abstract mathematical algorithmic systems that satisfy the Abstract mathematical constraints of claim 1. Note: the term device (which serves a purpose or performs a function) implies that the claim is directed to an Abstract mathematical algorithm for a specific function or purpose whereas the body of the claim is directed to all abstract mathematical algorithmic systems that satisfy the Abstract mathematical constraints of claim 1. For the purposes of advancing prosecution the Examiner assumes the claim is directed to all abstract mathematical algorithmic systems that satisfy the Abstract mathematical constraints of claim 1 since that is what is specified in the claim limitations.

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claim 1 is rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. Claim 1 is directed to an Operation device for translating first representation data in an abstract direct product B_r^n of r-value sets B_r to a second representation data in an abstract direct product B_r^m of r-value sets B_r whereby B_r^n and B_r^m have respective unary, binary and T-nary operators and extended unary, binary and T-nary operators $G_N^q : B_r^m \rightarrow B_r^n$, $F_N^q : B_r^n \times B_r^m \rightarrow B_r^m$, $H_N^s : B_r^m \times B_r^m \cdots \times B_r^m \rightarrow B_r^m$, $G^q : \Omega_{G^q} in \rightarrow \Omega_{G^q} out$, $F^p : \Omega_{G^q} in \times \Omega_{G^q} in \rightarrow \Omega_{G^q} out$, $F^p : \Omega_{G^q} in \times \Omega_{G^q} in \cdots \times \Omega_{G^q} in \rightarrow \Omega_{G^q} out$, $G_O^q : B_r^n \rightarrow B_r^n$, $F_O^q : B_r^n \times B_r^n \rightarrow B_r^n$ and $H_O^s : B_r^n \times B_r^n \cdots \times B_r^n \rightarrow B_r^n$ comprising an encoder defined as an abstract operator $\Phi : B_r^n \rightarrow B_r^m$ operating on an abstract direct product B_r^n of r-value sets B_r ; a decoder defined as an abstract operator $\Psi : B_r^m \rightarrow B_r^n$ operating on an abstract direct product B_r^m of r-value sets B_r ; an operation means for second representation data in the abstract direct product B_r^m defined by respective unary, binary and T-nary operators $G_N^q : B_r^m \rightarrow B_r^m$, $F_N^q : B_r^m \times B_r^m \rightarrow B_r^m$ and $H_N^s : B_r^m \times B_r^m \cdots \times B_r^m \rightarrow B_r^m$; and an operation means for first representation data in the abstract direct product B_r^n defined by respective unary, binary and T-nary operators $G^q : \Omega_{G^q} in \rightarrow \Omega_{G^q} out$, $F^p : \Omega_{G^q} in \times \Omega_{G^q} in \rightarrow \Omega_{G^q} out$ and $F^p : \Omega_{G^q} in \times \Omega_{G^q} in \cdots \times \Omega_{G^q} in \rightarrow \Omega_{G^q} out$ that can be

extended to, $G_O^q : B_r^n \rightarrow B_r^n$, $F_O^q : B_r^n \times B_r^n \rightarrow B_r^n$ and $H_O^s : B_r^n \times B_r^n \cdots \times B_r^n \rightarrow B_r^n$ satisfying the five (5) abstract set theoretic constraints in the last five lines of claim 1.

The Authoritative Dictionary of IEEE Standards Terms defines device as (10) A mechanism or piece of equipment designed to serve a purpose or perform a function (11) A computer peripheral or an object that appears to the application as such. Claim 1 is indefinite since it is not clear whether the claim is directed to an Abstract mathematical algorithm or whether the claims are directed to all abstract mathematical algorithmic systems that satisfy the Abstract mathematical constraints of claim 1. Note: the term device (which serves a purpose or performs a function) implies that the claim is directed to an Abstract mathematical algorithm for a specific function or purpose whereas the body of the claim is directed to all abstract mathematical algorithmic systems that satisfy the Abstract mathematical constraints of claim 1.

For the purposes of advancing prosecution the Examiner assumes the claim is directed to all abstract mathematical algorithmic systems that satisfy the Abstract mathematical constraints of claim 1 since that is what is specified in the claim limitations.

The courts have held that a claim may not preempt ideas, laws of nature or natural phenomena. The concern over preemption was expressed as early as 1852. See *Le Roy v. Tatham*, 55 U.S. 156, 175 (1852) ("A principle, in the abstract, is a fundamental truth; an original cause; a motive; these cannot be patented, as no one can claim in either of them an exclusive right."); *Funk Brothers Seed Co. v. Kalo Inoculant Co.*, 333 U.S. 127, 132, 76 USPQ 280, 282 (1948) (combination of six species of bacteria held to be nonstatutory subject matter).

**>Accordingly, one may not patent every "substantial practical application" of an idea, law of nature or natural phenomena because such a patent would "in practical effect be a patent on the [idea, law of nature or natural phenomena] itself." *Gottschalk v. Benson*, 409 U.S. 63, 71-72, 175 USPQ 673, 676 (1972).

Simply put, claims that describe features in the Applicant's specification at the Abstract level without any regard to function or utility are nonstatutory.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim 1 is rejected under 35 U.S.C. 102(b) as being anticipated by Okita; Shigeru (US 6378104 B1).

Rejection of claim 1.

Okita is directed to an Operation device for translating first representation data in an abstract Galois Field $B_r^n = GF_b(2^m)$ where $n = m$ and $GF_b(2^m)$ is substantially a direct product of r-value sets $B_r = GF_b(2)$ to a second representation data in an abstract Galois Field $B_r^m = GF_a(2^m)$ where $GF_a(2^m)$ is substantially a direct product of r-value sets $B_r = GF_a(2)$. Since respective unary, binary and T-nary operators $G_N^q : B_r^m \rightarrow B_r^m$,

$$F_N^q : B_r^m \times B_r^m \rightarrow B_r^m, H_N^s : B_r^m \times B_r^m \cdots \times B_r^m \rightarrow B_r^m, G^q : \Omega_{G^q} in \rightarrow \Omega_{G^q} out,$$

$$F^p : \Omega_{G^p} in \times \Omega_{G^p} in \rightarrow \Omega_{G^p} out, F^p : \Omega_{G^p} in \times \Omega_{G^p} in \cdots \times \Omega_{G^p} in \rightarrow \Omega_{G^p} out \text{ are inherently}$$

defined over the whole Galois fields $B_r^m = GF_a(2^m)$ and $\Omega_{G^q} in = GF_a(2^m)$, respective extensions on $B_r^m = GF_a(2^m)$ and $\Omega_{G^q} in = B_r^m = GF_a(2^m)$ must coincide. Note: all Galois fields of the same order are isomorphic, hence any translation or rotation of a Galois field from $GF_b(2^m)$ to $GF_a(2^m)$ preserves unary, binary and T-nary operators over the fields so that after appropriate translation and/or rotation of unary, binary and T-nary operators over $GF_b(2^m)$ to unary, binary and T-nary operators over $GF_a(2^m)$, the two operational systems over the respective Galois fields, $GF_b(2^m)$ and $GF_a(2^m)$, are indistinguishable preserving all set theoretic constraints.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joseph D. Torres whose telephone number is (571) 272-3829. The examiner can normally be reached on M-F 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Scott T. Baderman can be reached on (571) 272-3644. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Joseph D Torres
Primary Examiner
Art Unit 2112

/Joseph D Torres/
Primary Examiner, Art Unit 2112